

Amendments to the Claims

Please amend Claims 1, 2, 4, 7 and 9, and add new Claims 34-37 to read as follows.

1. (Currently amended) An ink jet recording apparatus for using a recording head having a plurality of discharge apertures and a plurality of recording elements corresponding to the discharge apertures and discharging ink from the discharge apertures onto a recording medium by application of a drive signal to the recording elements, the ink jet recording apparatus comprising:

driving means for dividing the plurality of recording elements into a plurality of blocks such that each block includes a predetermined number of recording elements and for sequentially driving each one of the blocks so as to ~~discharge ink~~ drive the plurality of blocks within a discharge cycle whose time period varies depending on a resolution of ~~an image~~ data to be recorded; and

adjusting means for adjusting the drive signal applied to the recording elements based on the number of recording elements to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven within the discharge cycle by said driving means.

2. (Currently amended) The ink jet recording apparatus according to claim 1, wherein the adjusting means comprises:

first calculating means for calculating the number of recording elements to be driven in the discharge cycle; and

second calculating means for calculating the number of recording elements to be substantially simultaneously driven in each one of the plurality of blocks,

wherein said adjusting means changes a pulsewidth of a drive pulse signal applied to the recording ~~element~~ elements of the recording head based on values calculated by said first calculating means and said second calculating means.

3. (Original) The ink jet recording apparatus according to claim 1, wherein each one of the recording elements includes an electrothermal transducer that generates heat when the drive signal is applied thereto, the heat causing a bubble to be generated in the ink.

4. (Currently amended) An ink jet recording apparatus having a plurality of recording heads, each of which includes a plurality of discharge apertures arranged in rows in a direction perpendicular to a scanning direction of a recording head carriage of the ink jet recording apparatus, wherein the plurality of recording heads are arranged on the recording head carriage in a direction parallel to the scanning direction, for applying a drive signal to recording elements provided corresponding to the discharge apertures so as to discharge ink from the plurality of recording heads onto a recording medium, the ink jet recording apparatus comprising:

driving means for dividing the plurality of recording elements of each recording head into a plurality of blocks such that each block includes a predetermined number of recording elements and sequentially driving each one of the blocks so as to ~~discharge ink~~ drive the plurality of blocks within a discharge cycle whose time period varies depending on a resolution of ~~an image~~ data to be recorded; and

adjusting means for adjusting the drive signal applied to the recording elements based on the number of recording elements of each of the recording heads to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven within the discharge cycle by the driving means.

5. (Previously presented) The ink jet recording apparatus according to claim 4, wherein the adjusting means comprises:

first calculating means for calculating the number of recording elements of each recording head to be driven in the discharge cycle;

second calculating means for calculating the number of recording elements of each recording head to be substantially simultaneously driven in each one of the plurality of blocks; and

adding means for adding a value calculated by said first calculating means and a value calculated by said second calculating means for those recording heads that are driven simultaneously,

wherein said adjusting means changes a pulsewidth of a drive pulse signal applied to each of the plurality of recording heads based on values calculated by said first calculating means and said second calculating means.

6. (Original) The ink jet recording apparatus according to claim 4, wherein at least one of the plurality of recording heads is driven at a timing different from that of the other recording heads.

7. (Currently amended) An ink jet recording method for an ink jet recording apparatus which has a recording head including a plurality of discharge apertures and a plurality of recording elements corresponding to the plurality of discharge apertures and applies a drive signal to the recording elements to discharge ink from the recording head onto a recording medium, the ink jet recording method comprising the steps of:

dividing the plurality of recording elements into a plurality of blocks such that each block includes a predetermined number of recording elements and sequentially driving each one of the blocks so as to ~~discharge ink~~ drive the plurality of blocks within a discharge cycle whose length varies depending on a resolution of an image data to be recorded; and

adjusting the drive signal applied to the recording elements based on the number of recording elements to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven ~~by the driving means~~ within the discharge cycle.

8. (Previously presented) The ink jet recording method according to claim 7, wherein said step of adjusting the drive signal comprises the steps of:

calculating the number of recording elements to be driven within the discharge cycle in a first calculating step;

calculating the number of recording elements to be substantially simultaneously driven in each one of the plurality of blocks in a second calculating step; and

changing a pulsewidth of a drive pulse signal applied to the recording elements of the recording head based on values calculated in said first calculating step and said second calculating step.

9. (Currently amended) An ink jet recording method for an ink jet recording apparatus which has a plurality of ink jet recording heads, each having a plurality of discharge apertures arranged in rows in a direction perpendicular to a scanning direction, wherein the plurality of recording heads are arranged in a direction parallel to the scanning direction, and applies a drive signal to recording elements provided corresponding to the discharge apertures so as to discharge ink from the plurality of recording heads onto a recording medium, the ink jet recording method comprising:

a division step of dividing the plurality of recording elements of each recording head into a plurality of blocks such that each block includes a predetermined number of recording elements;

a driving step of sequentially driving each one of the blocks so as to ~~discharge ink~~ drive the plurality of blocks within a discharge cycle whose length varies depending on a resolution of ~~an image~~ data to be recorded; and

an adjusting step of adjusting the drive signal applied to the recording elements based on the number of recording elements of each of the recording heads to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven within the discharge cycle at said driving step.

10. (Previously presented) The ink jet recording method according to claim 9, wherein said adjusting step comprises the steps of:

calculating a first number of recording elements of each recording head to be driven in the discharge cycle;

calculating a second number of recording elements of each recording head to be substantially simultaneously driven in each one of the plurality of blocks; and

adding the first number and the second number together for those recording heads that are driven simultaneously; and

changing a pulsewidth of a drive pulse signal applied to each one of the plurality of recording heads based on a sum obtained in said adding step.

11. (Original) The ink jet recording method according to claim 9, wherein at least one of the plurality of recording heads is driven at a timing different from that of the other recording heads.

Claims 12-33 (cancelled)

34. (New) The ink jet recording apparatus according to claim 1, wherein said adjusting means obtains the number of recording element to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven within the discharge cycle.

35. (New) The ink jet recording apparatus according to claim 4, wherein said adjusting means obtains the number of recording element to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven within the discharge cycle.

36. (New) The ink jet recording method according to claim 7, wherein in said adjusting step, the number of recording elements to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven within the discharge cycle are obtained.

37. (New) The ink jet recording method according to claim 9, wherein in said adjusting step, the number of recording elements to be driven within the discharge cycle and the number of recording elements to be substantially simultaneously driven in each of the blocks sequentially driven within the discharge cycle are obtained.